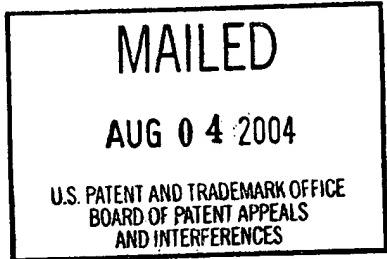


The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES



Ex parte ARLEN L. ROESNER
and DOUGLAS A. FLECS

Appeal No. 2004-1455
Application 10/017,543

ON BRIEF

Before WARREN, KRATZ and MOORE *Administrative Patent Judges*.

WARREN, *Administrative Patent Judge*.

Decision on Appeal

This is an appeal under 35 U.S.C. § 134 from the decision of the examiner finally rejecting claims 1 through 30, all of the claims in the application. Claims 1, 10 and 12 are illustrative of the claims on appeal:

1. A thermal interface comprising:
a carrier having opposed surfaces;
a layer of a phase-change material on one of the surfaces of the carrier; and
a layer of a pliable, thermal compound on the other surfaces of the carrier.
10. A thermal interface product comprising:
a carrier having opposed surfaces;
a layer of a phase-change material on one of the surfaces of the carrier;

a layer of a pliable, thermal compound on the other surfaces of the carrier; and a removable protective covering overlying the pliable, thermal compound layer.

11. The thermal interface product of claim 10 in which:

the removable protective covering comprises a peelable backing.

12. The thermal interface product of claim 10 in which:

the removable protective covering comprises a cap removably attached to the carrier.

The appealed claims, as represented by the above claims, are drawn to a thermal interface comprising at least a carrier having on opposite sides thereof a layer of phase-change material and a layer of pliable, thermal compound, wherein the layer of pliable, thermal compound can be covered with a removable protective covering as in claim 10, the covering being a peelable backing in claim 11 and a cap in claim 12. According to appellants, the “multilayer thermal interface [is] for conducting heat from a heat-dissipating electronic component to a heat sink” (specification, page 1).

The references relied on by the examiner are:

Brzezinski	5,608,610	Mar. 4, 1997
Lee et al. (Lee)	6,049,458	Apr. 11, 2000
Green et al. (Green)	6,197,859	Mar. 6, 2001
		(filed Jan. 30, 1998)
Tzeng et al. (Tzeng)	6,245,400	Jun. 12, 2001
		(filed Oct. 7, 1998)

The examiner has advanced the following grounds of rejection on appeal:

claims 1 through 9 and 22 through 30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Green in view of Brzezinski;

claims 10, 11 and 13 through 21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Green in view of Brzezinski further in view of Tzeng; and

claim 12 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Green in view of Brzezinski further in view of Tzeng, as applied to claim 10, and further in view of Lee.

Appellants group the appealed claims as they appear in the three grounds of rejection (brief,¹ page 6). Thus, we decide this appeal based on appealed claims 1, 11 and 12 as representative of the respective grounds of rejection. 37 CFR § 1.192(c)(7) (2003).

¹ We consider the brief filed February 23, 2004, and the reply brief filed April 15, 2004.

We affirm the grounds of rejection of appealed claims 1 through 9, 12 and 22 through 30, and we reverse the ground of rejection of appealed claims 10, 11 and 13 through 21. Thus, the decision of the examiner is affirmed-in-part.

Rather than reiterate the respective positions advanced by the examiner and appellants, we refer to the examiner's answer and to appellants' brief and reply brief for a complete exposition thereof.

Opinion

As we did in our decision in Appeal No. 2003-1412, entered in this application on June 30, 2003 ("prior decision"), we must first interpret the language of appealed claims 1, 11 and 12 by giving the claim terms their broadest reasonable interpretation in light of the written description in the specification as it would be interpreted by one of ordinary skill in this art. *See In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997) ("[T]he PTO applies to the verbiage of the proposed claims the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the applicant's specification."); *In re Zletz*, 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989) ("During patent prosecution the pending claims must be interpreted as broadly as their terms reasonably allow. When the applicant states the meaning that the claim terms are intended to have, the claims are examined with that meaning, in order to achieve a complete exploration of the applicant's invention and its relation to the prior art. *See In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969).").

We remain of the view expressed in our prior decision, that it is apparent from the plain language of appealed claims 1, 11 and 12, that the specified

thermal interface comprises at least any carrier having a layer of any "phase-change material" on one side thereof and a layer of any "pliable, thermal compound" on the other side thereof. We are of the opinion that one of ordinary skill in this art would understand from the specification that a "phase-change material" is, as the terms imply, a material which changes phase, in this case from solid at room temperature to at least partially liquid at higher temperatures; and that a "pliable, thermal compound" is a compound or composition that is pliable and does not change phases, in this case a change in viscosity from semi-liquid at room temperature to liquid at higher

temperatures (e.g., page 1, line 15, to page 2, line 11; and, page 5, line 16, to page 6, line 12). [Prior decision, page 2.]

On this record, we are not persuaded otherwise by the examiner's *unsupported* allegations that "claiming a phase change material and a pliable material is, in fact addressing two different, not mutually exclusive properties of a material," and that in giving the claim terms the "broadest reasonable interpretation the pliable thermal compound does not exclude phase change material, so it can be a pliable thermal compound and a phase change material or vice versa at the same time" (answer, page 5). It is apparent that contrary to the guidance of our reviewing court in *Morris, supra*, and *Zletz, supra*, the examiner has not taken the written description in the specification as it would be interpreted by one of ordinary skill in this art, into account, including the disclosed temperature parameters by which "phase-change material" and "pliable, thermal compound" are distinguished.

Indeed, the examiner has not identified a single material in the record which possesses the asserted dual characteristics. We find no support in Green, one of the two principal references in each of the grounds of rejection, for the examiner's allegation that "Green discloses the claimed invention except having the pliable thermally conductive material being the phase change material therefore having that material on both sides of the carrier" (answer, pages 3 and 5). To the contrary, Green describes phase-change materials in contrast to "grease," and discloses a phase-change material composition having "alkyl groups . . . [that] are *crystalline at room temperature, providing a coating in dry film form at normal room temperature,*" that undergoes a phase change at normal operating temperatures of the device in which it is used (e.g., col. 1, line 36, to col. 4, line 57).

We found in our prior decision (pages 4-5), and remain of the view here, that Green would have disclosed to one of ordinary skill in this art thermally interface materials which have the disclosed phase change material composition on one or both sides of a "carrier" that can be, e.g., plastic film, metal foil or fabric (e.g., col. 1, lines 36-61), and further acknowledges that it was known in the art to use "a layer of grease . . . to create a low thermal resistance path between the opposed mating surfaces of the package and the mounting surface . . . [to] enhance thermal conductivity" (e.g., col. 2, lines 27-40). Appellants similarly describe the disclosure of Green

(brief, pages 6-7). We further found in our prior decision (pages 4-5), and remain of the view here, that appellants acknowledge that it was known in the art to use a pliable, thermal compound, such as silicone grease, as well as phase-change materials as thermal conductive filler material, both of which flow into irregularities in confronting heat sink and component surfaces at operating temperatures of electronic devices, and to use multilayer thermal interfaces wherein a metal foil is coated on both sides with a phase-change material, which phase-change material performs as acknowledged, that is, flow into irregularities in interfacing surfaces (specification, pages 1-2).²

The examiner contends that Brzezinski, the other principal references in each of the grounds of rejection, "discloses the thermal interface arrangement having the phase change material 58 (col. 6, lines 33-35) on one side of carriers 56 and thermal grease on the opposite side of the carrier (col. 7, lines 12-16)" (answer, page 3). Appellants describe the teaching of Brzezinski as follows:

Brzezinsky [sic] discloses in Fig. 1 a dual heat sink, "floating" multi-chip module 10 that encloses a flexible, conformable, leak-proof metallic membrane 56 one side of which bears against the passive sides of chips 28-38 in a first chamber 24. A synthetic thermal grease may be used to coat the passive sides of the chips 28-38 (Brzezinski, 7/12-16.) The other side of the membrane 56 faces a second chamber filled with a volume of thermally conductive liquid 58. Various liquids are disclosed, including distilled water with ten percent ethylene glycol; a synthetic Freon; and "phase-change salts which quickly give up energy when caused to boil" (6/29-37). [Brief, page 7.]

The examiner responds that Brzezinski "allows a wide range of different materials for element 58 that includes phase change salts and it appears to be irrelevant in what state those salts are – solid, liquid or vapor since they suppose to change their phase depending on heat generated by components" (answer, page 6).

² See *In re Nomiya*, 509 F.2d 566, 570-71, 571 n.5, 184 USPQ 607, 611, 611 n.4 (CCPA 1975) ("We see no reason why appellants' representations in their application should not be accepted at face value as admissions that Figs. 1 and 2 may be considered "prior art" for any purpose, including use as evidence of obviousness under § 103. [Citations omitted.] By filing an application containing Figs. 1 and 2, labeled prior art, *ipsissimis verbis*, and statements explanatory thereof, appellants have conceded what is to be considered as prior art in determining obviousness of their improvement.").

We agree with appellants' findings. We additionally point out that Brzezinski describes the apparatus of **FIG. 1** as including "a conformal heat transfer interface between chips **28-38** and the first heat sink **12** thereby compensating for any non-coplanarity among the passive sides of the chips," wherein "[a] portion of the metallic membrane **56** is spaced apart from the first heat sink to define a second chamber in which a thermally conductive fluid **58** is contained" (col. 5, lines 64-67, and col. 6, lines 19-21). Brzezinski discloses that the

[t]he volume of the fluid is such that it completely fills the second chamber to provide a thermal path from the metallic membrane **56** of the first heat sink **12** and so that the fluid exerts a pressure on the metallic membrane even when the module **10** is installed in a vertical position, rather than the horizontal position shown in **FIG. 1**. [Col. 6, lines 21-25.]

Brzezinski discloses that "[p]hase-change salts" and "synthetic freon" are "[s]ubstitutes" for the "thermally conductive liquid" or "fluid **58**" (col. 6, lines 19-38), and that in view of differences in the thermal coefficients of semiconductor chips and aluminum heat sinks, "it is advantageous to have a filler that is easily displaced, such as distilled water, rather than a material such as grease which flows more slowly" (col. 6, lines 39-44). Brzezinski teaches that

The metallic membrane **56** conforms to variations in the heights and angles of the integrated circuit chips **28-38**. The thermally conductive fluid **58** provides a pressure for conforming the metallic membrane to the passive sides of the chips, thereby providing an efficient heat transfer path for the chips to the first heat sink **12**. . . . [Col. 6, lines 49-55.]

We further find in this respect, that Brzezinski discloses that

[t]o maximize the thermal interface, synthetic thermal grease may be used to coat the passive sides of the integrated circuit chips **28-38**, thereby filing any minute crevices that are sometimes formed in the fabrication of integrated circuit chips. [Col. 7, lines 12-16.]

Based on the substantial evidence in the combined teachings of Green and Brzezinski, we determine that, *prima facie*, one of ordinary skill in this art armed with the knowledge in the art with respect to phase change material and pliable, thermal compounds as thermal conductive filler material and the use of multilayer thermal interfaces wherein a metal foil is coated on both sides with a phase-change material, as acknowledged by appellants, would have been motivated to use a phase change material on one side of a carrier and a pliable, thermal material on the

other side of the carrier, in the reasonable expectation of forming a thermal interface with a double-sided structure which fills in the irregularities between it and components of the device which it interfaces at operating temperatures to provide thermal conductivity.

Accordingly, *prima facie*, one of ordinary skill in this art reasonably following the combined teachings of Green and Brzezinski would have reasonably arrived at the claimed thermal interface encompassed by appealed claim 1, including each and every element arranged as required by the claim, without recourse to appellants' specification. *See In re Dow Chem. Co.*, 837 F.2d 469, 473, 5 USPQ2d 1529, 1531-32 (Fed. Cir. 1988) ("The consistent criterion for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that [the claimed process] should be carried out and would have a reasonable likelihood of success viewed in light of the prior art. [Citations omitted] Both the suggestion and the expectation of success must be founded in the prior art, not in the applicant's disclosure."); *In re Keller*, 642 F.2d 413, 425, 208 USPQ 871, 881-82 (CCPA 1981) ("The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art."); *In re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980) ("It is *prima facie* obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition which is to be used for the very same purpose. *In re Susi*, . . . 440 F.2d 442, 445, 169 USPQ 423, 426 ([CCPA] 1971); *In re Crockett*, . . . 279 F.2d 274, 276-77, 126 USPQ 186, 188 ([CCPA] 1960). As this court explained in Crockett, the idea of combining them flows logically from their having been individually taught in the prior art."); *In re Siebentritt*, 372 F.2d 566, 567-68, 152 USPQ 618, 619 (CCPA 1967) (express suggestion to interchange methods which achieve the same or similar results is not necessary to establish obviousness); *see also In re O'Farrell*, 853 F.2d 894, 903-04, 7 USPQ2d 1673, 1680-81 (Fed. Cir. 1988) ("Obviousness does not require absolute predictability of success. . . . There is always at least a possibility of unexpected results, that would then provide an objective basis for showing that the invention,

although apparently obvious, was in law nonobvious. [Citations omitted.] For obviousness under § 103, all that is required is a reasonable expectation of success. [Citations omitted.]").

Turning now to appealed claim 12, the plain language of this claim requires that the double-sided carrier thermal interface of appealed claim 10, which is the double-sided carrier thermal interface of appealed claim 1, has a removable protective covering overlying the pliable, thermal protective layer which is a cap removably attached to the carrier. *See Morris, supra; Zletz, supra.* We find that, *prima facie*, one of ordinary skill in this art routinely following the combined teachings of Green, Brzezinski and Lee³ would have been motivated to protect the pliable, thermal compound layer of the double-sided carrier thermal interface taught by the combined teachings of Green and Brzezinski with the removable protective cap taught by Lee to protect pliable, thermal compound layer of thermal interface in the reasonable expectation of providing the protection expected from Lee's disclosure. Indeed, we agree with the examiner that "Lee discloses the removable protective cap 56 to protect thermal grease 40 prior to installation" in view of the substantial evidence at col. 1, lines 22-40 and 53-56, and col. 2, lines 27-34 and 50-53, of Lee. Accordingly, *prima facie*, one of ordinary skill in this art reasonably following the combined teachings of Green, Brzezinski and Lee would have reasonably arrived at the claimed thermal interface wherein the pliable, thermal compound layer is protected by a cap encompassed by appealed claim 12, including each and every element arranged as required by the claim, without recourse to appellants' specification. *See Dow Chem.*, 837 F.2d at 473, 5 USPQ2d at 1531-32; *Keller*, 642 F.2d at 425, 208 USPQ at 881-82.

Accordingly, since a *prima facie* case of obviousness has been established over the prior art with respect to appealed claims 1 and 12, we have again evaluated all of the evidence of obviousness and nonobviousness based on the record as a whole, giving due consideration to the weight of appellants' arguments in the brief and reply brief. *See generally, In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); *In re Johnson*, 747 F.2d 1456, 1460, 223 USPQ 1260, 1263 (Fed. Cir. 1984); *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984).

³ A discussion of Tzeng is not necessary to our decision with respect to appealed claim 12. *See In re Kronig*, 539 F.2d 1300, 1302-04, 190 USPQ 425, 426-28 (CCPA 1976).

Appellants do not dispute that the use of phase-change material and pliable, thermal compounds as thermal interfaces between components of electronic devices is well known in the art. Nor do appellants dispute that it is known in the art to use phase-change material with a carrier. Appellants submit that it would not have been obvious to use a pliable, thermal compound as a layer on a carrier which has a phase-change material layer because there is no suggestion to do so in the prior art for several reasons. First, appellants argue that there is no motivation to combine the disparate teachings of Green and Brzezinski, contending that "Brzezinski's thermal management scheme differs in critical respects from Green's" because the former reference uses a different type of thermal conductive material than either the pliable, thermal compounds or the phase-change material acknowledged and disclosed in Green (brief, pages 10-11). We are not convinced that one of ordinary skill in this art would have considered the teachings of Green and Brzezinski to be disparate with respect to thermal conductive paths between component surfaces of a device and thus, would not have combined the teachings of these two references.

We found above that one of ordinary skill in this art was armed with knowledge of the use of both pliable, thermal compounds and phase-change materials as thermal conductor filler material which flows into interface irregularities between components at operating temperature of an electronic device, and multilayer thermal interfaces wherein a metal foil is coated with a phase-change material, as appellants acknowledge. Such materials are found in Green. We find that this person would have found in Brzezinski the teaching that the purpose of the thermally conductive liquid **58** on one side of membrane **56** is to provide a thermal conductivity path *and* conform the membrane **56** to the passive side of chips **28-38**, and the purpose of the pliable, thermal grease compound on the other side of the membrane is to maximize the interface between the membrane and the chips by filling in any spaces remaining between the two. We are of the opinion that one of ordinary skill would have thus recognized from Brzezinski that different conductive materials can be used on different sides of the membrane and that a pliable, thermal conductive filler can be used to conform the membrane to a component surface to

maximize thermal conductivity.⁴ Therefore, one of ordinary skill in this art would not have considered Green and Brzezinski to be disparate disclosures, and would have combined the teachings thereof along with the knowledge of thermal conductive fillers in the art to address the formation of a thermal conductive path between component surfaces in an electronic device. *See In re Clay*, 966 F.2d 656, 658, 23 USPQ2d 1058, 1060-61 (Fed. Cir. 1992).

Second, appellants submit that the art recognized problems with pliable, thermal grease conductive filler coatings are a “teaching away” from the use of this material in thermal conductive path applications, pointing to the disclosure in Green at col. 2, lines 41-61 (brief, page 12). Appellants argue that, contrary to our position in the prior decision (page 5), *In re Gurley*, 27 F.3d 551, 553, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994), “is inapposite” because “[t]here . . . applicant was unable to distinguish this claimed product from that described in the single cited reference,” while here, “there simply is no teaching in the references for the Examiner’s suggested modification so as to arrive at the combination of elements presently claimed” (brief, page 12).

We stated in our prior decision that

While these known materials can have the disadvantages pointed out in Green and in the specification, that reason alone is not enough to teach away from the use of such materials in thermal interface applications by one of ordinary skill in this art. *See, e.g., In re Gurley*, 27 F.3d 551, 553, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994) (“We share Gurley’s view that a person seeking to improve the art of flexible circuit boards, on learning from Yamaguchi that epoxy was inferior to polyester-imide resins, might well be led to search beyond epoxy for improved products. However, Yamaguchi also teaches that epoxy is usable and has been used for Gurley’s purpose.”).

We are not convinced by appellants’ argument that our position in the prior decision, for which we cited *Gurley*, is not pertinent or unsuitable to the facts in the record before us then or,

⁴ It is well settled that a reference stands for all of the specific teachings thereof as well as the inferences one of ordinary skill in this art would have reasonably been expected to draw therefrom, see *In re Fritch*, 972 F.2d 1260, 1264-65, 23 USPQ2d 1780, 1782-83 (Fed. Cir. 1992); *In re Preda*, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968), presuming skill on the part of this person. *In re Sovish*, 769 F.2d 738, 743, 226 USPQ 771, 774 (Fed. Cir. 1985).

indeed, now.⁵ The problems associated with pliable, thermal grease conductive filler coatings are known in the art as acknowledged by appellants in the specification (page 1) and by Green as cited by appellants. Even so, Brzezinski uses such material as a pliable, thermal conductive filler to maximize a thermal interface as we found above. Thus, between the acknowledged use in the prior art and the use by Brzezinski, there is substantial evidence that such material was used in the art as a thermal conductive filler for which purpose appellants also employ it in the claimed invention. As in *Gurley*, 27 F.3d 551, 553, 31 USPQ2d 1130, 1132, appellants have not distinguished the pliable, thermal compound specified in the appealed claims from the pliable, thermal grease conductive fillers known in the art.

Indeed, we observe that appellants acknowledge the art recognized different disadvantages of pliable, thermal compounds and phase-change material in the specification (pages 1-2). Thus, viewed in this respect, the substitution of a pliable, thermal compound for a phase-change material involves the substitution of one known disadvantage for another in the performance of the same function in otherwise the same or similar manner.

Furthermore, with respect to appealed claim 12, we are of the view that, contrary to appellants' arguments (brief, pages 15-16), Green, Brzezinski and Lee are combinable because each of these references discloses pliable, thermal grease compounds, and Lee further discloses the problem of contamination of such material and a solution thereto by the use of protective cap 50, which is all that claim 12 requires.

Accordingly, based on our consideration of the totality of the record before us, we have weighed the evidence of obviousness found in the combined teachings of Green and Brzezinski and of Green, Brzezinski, Tzeng and Lee with appellants' countervailing evidence of and argument for nonobviousness and conclude that the claimed invention encompassed by appealed claims 1 through 9, 12 and 22 through 30 would have been obvious as a matter of law under 35 U.S.C. § 103(a).

⁵ It is not apparent from *Gurley* "that Gurley, in fact, is an anticipation case" involving a single reference, as appellants contend (brief, page 13 n.2), because the ground of rejection in that case was under 35 U.S.C. § 103 over Yamaguchi "and the prior art set forth in Gurley's specification." 27 F.3d 551, 553, 31 USPQ2d 1130, 1131.

Considering now appealed claim 11, the plain language of this claim requires that the double-sided carrier thermal interface of appealed claim 10 has a removable protective covering overlying the pliable, thermal protective layer which is a peelable backing. *See Morris, supra; Zletz, supra.* The examiner adds Tzeng to the combination of Green and Brzezinski for the disclosure of a “thermal interface having a pressure sensitive layer 13 covered by a removable protective cover comprising a peelable backing” (answer, page 4). Appellants submit that Tzeng “relates to a pressure sensitive adhesive, flexible graphite thermal interface sheet” which includes an adhesive primer 12 with pressure sensitive adhesive coating 13 thereon “and a release liner 14 on the pressure sensitive adhesive coating,” citing col. 2, lines 3-9 and 23-24 (brief, page 14). Thus, appellants argue that Tzeng would not have motivated one of ordinary skill in the art to use release liner 14 for pressure sensitive adhesive layer 13 as a peelable layer “to cover a layer of pliable, thermal compound such as silicone grease which is virtually the antithesis of an adhesive,” pointing out that the examiner has not supported his position (*id.*, pages 14-15). The examiner responds that appellants do “not provide sufficient evidence that the removable protective cover 14 used to cover pressure sensitive adhesive in [Tzeng] cannot be used to cover a layer of pliable thermal compound which, by definition, covers [sic, a] wide variety of different materials and some of them comprise adhesive substances, e.g., epoxy, silicon” (answer, page 7).

We agree with appellants’ position, because we also do *not* find any evidence in the record in support of the examiner’s position in the answer (pages 4 and 7). Indeed, in the absence of a scientific explanation or objective evidence it is not apparent that any of the materials described by Tzeng as pressure sensitive adhesives (e.g., col. 5, lines 53-65) would in fact be “a pliable, thermal compound” as required by appealed claim 11.

Accordingly, in the absence of substantial evidence supporting the examiner’s position, a *prima facie* case of obviousness within the meaning of § 103(a) has not been established on this record, and therefore, we reverse the ground of rejection of appealed claims 10, 11 and 13 through 21.

In summary, we have affirmed the grounds of rejection of appealed claims 1 through 9, 12 and 22 through 30, and we have reversed the ground of rejection of appealed claims 10, 11 and 13 through 21.

Other Issues

We decline to exercise our authority under 37 CFR § 1.196(b) (2003) and enter on the record a new grounds of rejection of appealed claims 10 and 13 through 20 under 35 U.S.C. § 103(a) based on the combined teachings of Green, Brzezinski and Lee as applied to appealed claim 12 above, leaving it to the examiner to apply this combination of references along with any other applicable prior art developed by the examiner, to these claims, upon further prosecution of the appealed claims after disposition of this appeal

The examiner's decision is affirmed-in-part.

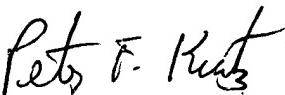
No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART



CHARLES F. WARREN
Administrative Patent Judge

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PETER F. KRATZ
Administrative Patent Judge

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Administrative Patent Judge

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Appeal No. 2004-1455

Application 10/017,543

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